Patterns of Silent Pausing in Aboriginal and Mainstream Australian Englishes Spoken in Warrnambool

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Abstract

A study of variation in the production of silent pauses, both turn-internal and response latencies (silent pauses immediately following the interlocutor's turn) in Aboriginal and Mainstream Australian Englishes (AAE and MAE) spoken in Warrnambool is presented. Neither frequency nor duration of turn-internal silent pauses yielded differences between the varieties. However, response latencies were more frequent in AAE. Further, when the number of opportunities for a response latency to occur were examined, delayed responses appeared more frequently in AAE than MAE. Implications for courtroom discourse contexts are discussed.

Index Terms: silent pauses, response latencies, fluency, disfluency, TOFFA, Australian Englishes, legal discourse

1. Introduction

1.1. Australian Englishes

In the 21st century Australian English is typically characterised as encompassing Mainstream Australian English (MAE), a group of varieties spoken by Indigenous Australians known as Australian Aboriginal Englishes (AAE), and a range of ethnocultural varieties [1]. The present paper focusses on MAE and AAE.

MAE is the most widely spoken of these varieties, and described by Cox and Fletcher [1: 11] as the "standard" and codified form used in Australia. While "standard" in this sense is not linked to correctness or prestige, attitude studies in Australia indicate that "standard" features of MAE are rated especially positively by listeners [2]. MAE is characterised as distinctive from other world Englishes by its particular combination of vowel and consonant realisations, connected speech processes, and prosodic features.

AAE varieties are spoken by First Nations people, whose ancestors spoke a wide range of Indigenous Australian languages prior to colonisation from 1788 onwards and subsequently experienced extensive language loss [e.g. 3]. AAE is an umbrella term for a range of varieties across different regions and L1 and L2 backgrounds. AAE varieties differ from MAE in various ways to varying extents at all levels of linguistic structure – in phonetics and/or phonology, grammar, semantics, pragmatics and lexicon [3-5].

1.2. Australian Englishes and the courtroom context

Originating in the 1980s [e.g. 6, 7], a growing body of work has highlighted aspects of intercultural communication (or *mis*communication) involving AAE speakers in legal processes which have critical implications for justice outcomes. Eades has written extensively on this topic and has documented a number of legal cases in which small differences in language use by AAE speakers have crucially affected the reception of evidence [e.g. 4 and papers therein, 8, 9]. Eades [4: 113] explains that while the interview format is a standard speech event in western societies, this has not been the case for Indigenous Australian societies until relatively recent times. Western-based legal processes rely heavily on interview formats: police interviews of suspects, lawyer-client interviews, and courtroom examination. She highlights a number of differences in intercultural communicative practices that can lead to misunderstandings when AAE speakers are involved in legal contexts. Among these is the observation that AAE speakers often employ and view silences in conversation in rather different ways from MAE speakers [4, see also 10], as is explored in the present study.

1.3. Australian Englishes and silences in interaction

Whereas western societies frequently see silence in conversation as negative and problematic, in Australian Indigenous communities silence can be valued positively, for example indicating that a conversation participant is thinking, or that members of the group are "enjoy[ing] the presence of others in a non-verbal way" [4: 114]. Such experiences of silence do not transfer well to contexts such as legal interviews where silence is can be interpreted as "evasion, ignorance, confusion or even guilt" [4: 114]. Eades argues that while silence cannot be taken as an admission of guilt in legal contexts, police officers, legal professionals and jurors are likely to find it difficult to ignore their cultural understanding of the meaning of silence, particularly when they are not mindful of the differing approaches to using and perceiving silences in conversation in AAE.

Several ethnographic studies comparing Australian Indigenous speakers and white Australians note differences in approaches to turn-taking and tolerance for silence [e.g. 10-14], yet there is very little empirical work examining these claims. An exception is a study by Mushin and Gardner [15] which investigates the conversation of Garrwa-speaking women, aged over 60 years, in two remote Aboriginal communities in Northern Australia. Five conversations moving between Garrwa, English and Kriol are analysed. The authors compare the length and positioning of silences in their data with previous findings on Anglo-Australian and American English using a Conversation Analysis approach. They found that silences greater than one second were more frequent than shorter silences in the Garrwa speakers' conversations, whereas the American English speakers produced short silences of 0.9-1.2s most often and far fewer longer silences. Using a range of insights from Conversation Analysis, Mushin and Gardner argue that talk among Indigenous Australian people may be qualitatively different in the way it is constructed and, that these speakers are comfortable with longer silences in their talk.

1.4. Group variation in pausing behaviour

Patterns of fluency behaviour, including pausing, can vary from one language variety to another, although few studies are available. [16] found filled pauses occurred more in Standard Southern British English than York English, while silent pauses occurred at similar rates in both varieties. [17] showed that longer silent pauses occur more frequently in York than Manchester Englishes, but that usage of other fluency features does not differ markedly across the two varieties. Among a range of differences in use of fluency features, [18] found silent pauses occurring with increasing frequency in British, American and New Zealand Englishes, in that order.

Research examining social variation in fluency features mostly focusses on filled pauses. Women have been shown to use *um* more often than *uh* [e.g. 17, 19-21]. *Um* is also more popular than *uh* with older speakers [19-21] and for speakers of higher socioeconomic status [19].

Sociolinguistic variation in fluency phenomena in Australian Englishes has received little research attention. One exception is [22] which reports a small number of differences between AAE and MAE in acoustic properties of filled pauses for speakers in the same corpora examined in the present study. Apart from Mushin and Gardner's [15] study of Garrwa women's conversation (see 1.3), variation in silent pausing in Australian Englishes is in need of quantitative investigation.

1.5. Aim

The present study investigates whether patterns of silent pausing are different across MAE and AAE varieties spoken in a non-urban location: Warrnambool, Victoria. The prediction tested is that silent pauses are more frequent and/or longer in duration in AAE compared with MAE.

2. Method

2.1. Participants

The speech of two groups of adult L1 Australian English speakers from Warrnambool, Victoria, is analysed. Warrnambool is located on the coast of south-west Victoria, approximately 250km from Melbourne. It has a population of approximately 36,000, with 3.2% of residents identifying as Aboriginal and/or Torres Straight Islander [23]. A community-driven language revitalization [see e.g. 24] is taking place for varieties of the Dhauwurd Wurrung language group in the region. The participants all identified either as male or female, and were 10 MAE speakers (4F, 6M, aged 18-72 years, mean = 33.6 years) and 10 AAE speakers (6F, 4M, aged 18-72 years, mean = 42 years). The AAE speakers included participants who identified as Gunditjmara people (Warrnambool, Framlingham) and Gunditj Mirring people (Heywood).

2.2. Data collection

The data analysed are from sociolinguistic interviews conducted by the fifth author in 2015 and 2016 as part of a larger elicitation process which also included a word list, a questionnaire and a perception study [25-27]. MAE speakers were mostly recorded in their homes in Warrnambool. AAE speakers were recorded in public spaces in Aboriginal co-operatives in Warrnambool and Heywood and in the health centre at Framlingham. Interviews ranged in duration from 3m17s to 36m45s. In the present study, 180s of "net speech" material concatenated from each speaker's interview were analysed, as yielded by interview extracts of 163s to 486s (mean extract duration = 304.2s), except in the cases of WN09 (MAE), WN25 (AAE) and WN31 (AAE) where only 125s, 167s and 123s of net speech respectively were available.

Annotation of target speech commenced at the first utterance after 60s of recording time had elapsed, to allow the interviewee time to settle in to the conversation. Once 180s net speech was reached, annotation finished at the utterance end thereafter. In cases where there was insufficient speech material after the 60s mark, the analyst returned to the first 60s of the recording to supplement the net speech collected.

2.3. Analysis of fluency using TOFFA

The present study analyses the pausing behaviour of these groups of speakers as part of a larger study looking at quantifying the broader profiles of fluency features present in the two varieties. The approach used draws on the 'Taxonomy of Fluency Features for Forensic Analysis' (TOFFA) framework, which was developed by the first and third authors to quantify fluency behaviour in naturally occurring speech for forensic phonetic purposes [28-30]. The framework categorises fluency features into the following top-level categories: Filled Pauses, Silent Pauses, Repetitions, Prolongations, Self-Interruptions. Each of these contain a number of subcategories for which full definitions are given in [28].

The present report focusses specifically on Silent Pauses; full TOFFA profiling of the speakers analysed will be reported in future work. Unlike the original version of TOFFA [28], in the present study silent pauses are not subdivided into the two subcategories of those at a grammatical boundary and those in other locations in the talk. Instead, silent pauses are subcategorised into two main types, *response latency* (RL), i.e. a silent pause immediately following a speaking turn of the interviewer (typically a question, but sometimes another type of conversational contribution), and *silent pause* (SP), which covers silent pauses occurring at any other point during the interviewee's speaking turn. The present data set includes 292 RL and 1055 SP tokens (means per speaker: 14.6 RL, 52.8 SP).

In Carroll's recent TOFFA-based study of individuals' fluency behaviour across speaking styles [17], silent pauses are subdivided via duration, as this approach proved useful in capturing individual differences between speakers. Therefore in the present study silent pauses are also subdivided according to duration, to explore whether differences between varieties may also be captured in this way. The following thresholds were used:

RL:	[rl1] ≥ 220ms	SP:	[sp1] ≥ 220ms
	[rl2] ≥ 500ms		[sp2] ≥ 500ms
	[r13] ≥ 800ms		[sp3] ≥ 800ms

Using *Praat* textgrids [31], the speech of each target speaker was transcribed orthographically. Boundaries were placed on the transcription tier at the beginning and end of each speaking turn of the target speaker to enable the calculation of the total net speech produced by the speaker for the section of the interview analysed. These net speech intervals included the duration of the RL preceding a given turn in cases where a RL was present. The full set of TOFFA fluency features were annotated on a separate tier. For the features of interest in the present study, interval boundaries were placed at the start-point and end-point of each feature. A *Praat* script was devised to extract the occurrences of the features of interest and their durations. A second *Praat* script segmented each interviewee's net speech stream into 20s time-stretches. *RStudio* was used to calculate the rate of occurrence of each fluency feature within each 20s time-stretch. Note that rates of fluency feature per unit

time are used, as in more recent TOFFA work [30], rather than the syllable-base of the original paper [28].

2.4. Response latency opportunities

While capturing the rates of occurrence according to the timing thresholds of the three RL subcategories gives some insight into the differing usage of response latencies across the two varieties, it does not show the full picture. This is because the RL metrics only capture the delay between the interviewer's turn and the interviewee starting talk where there is a silence of greater than 220ms. However, participants can also respond immediately (or with less than 220ms silence), or indeed they can commence speaking before the interviewee has finished and thus create an overlap. Hence in order to gain a more nuanced view of the use of RLs, the data were revisited and an additional 'RL opportunity' tier added in the *Praat* Textgrid on which all opportunities for an RL to occur were marked, i.e. the ends of the interviewer's turns (usually a question, but sometimes a comment prompting a response). Each opportunity was classed as 'D' for delayed response, 'I' for immediate response to the interviewer's prompt (0-220ms, the threshold defining an RL) or 'O' for overlap. The total number of RL opportunities was counted and proportions of D, I and O responses of the total number of RL opportunities then calculated per speaker.

2.5. Statistical analysis

Four linear mixed effects models were calculated, two each for (a) the rate of occurrence of RLs and SPs, and (b) the duration of RLs and SPs, in *RStudio* [32] using the *lme4* package [33]. In the first set of models (1a and 1b), rate and duration were treated as continuous dependent variables, and variety (MAE and AAE) and fluency category (RL and SP) were included as the main categorical predictor variables, as well as an interaction between variety and fluency feature category. In the second set of models (2a and 2b), the model formula was the same except that fluency category was substituted for fluency subcategory (rl1, rl2, rl3; sp1, sp2, sp3) in model 2a. Comparing the durations of tokens in [rl1], [rl2], [sp1] and [sp2] subcategories across varieties would not be helpful since their membership is determined by duration. However, it is worth comparing the durations of tokens of [rl3] and [sp3] across varieties, given that there is no upper limit on the duration of tokens in these categories (≥ 800ms in both cases). Hence in model 2b, fluency category was substituted by subcategories [rl3] and [sp3]. In all models, speaker number and 20s-time-stretch were included as random intercepts. *P*-values were estimated via *t*-values using *lmerTest* [34], which approximated these values using the Satterthwaite method. A model of the same structure was calculated for each fluency category and fluency subcategory after reordering the levels for response type to allow for comparison between all variables.

For the analysis of D, O and I as a proportion of total RL opportunities, *RStudio* was used to fit beta regression models to the data using the package *betareg* [34]. The choice of model was motivated by the non-normal and non-binary distribution of the outcome variable [36]. Three models were constructed for each respective RL category (D, O and I), with variety as the categorical predictor variable. A Bonferroni correction was used due to the multiple comparisons, resulting in an adjusted significance threshold of $\alpha = 0.0163$. Note that one AAE speaker (WN12) was omitted from this analysis due to essentially producing a long monologue in response to a single question for the entire section of speech analysed.

2.6. Inter-analyst consistency

For the first eight speakers, the second and third authors completed parallel but separate TOFFA analysis of the interviews. This exercise was used to calibrate the two analysts to the same standards, as well as to highlight any methodological issues and revisions to the TOFFA framework as necessary. After calibration was complete, the remaining twelve speakers were evenly assigned between the two analysts such that both completed the same number of MAE and AAE speakers.

3. Results

3.1. Rates of occurrence

Boxplots showing the distribution of speakers' rates of occurrence of RLs and SPs (with subcategories combined) for each variety are given in Figure 1.

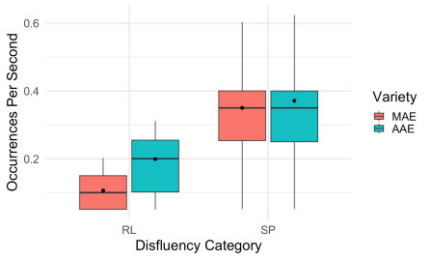

Figure 1: *Rates of occurrence of response latencies and silent pauses in MAE and AAE. Black dots (here and in subsequent figures) indicate the mean for each distribution.*

AAE speakers have a higher rate of RL (mean = 0.199 occurrences/s) than MAE speakers (mean = 0.106 occurrences/s) as is confirmed statistically ($\beta = 0.09$, $p = 0.006$). For SPs there is no significant difference between the two varieties (MAE mean = 0.350 occurrences/s, AAE mean = 0.371 occurrences/s) ($\beta = 0.03$, $p = 0.3$). In other words AAE speakers produce a long pause after a question/prompt more frequently than MAE speakers, but the two varieties display similar frequencies of occurrence of turn-internal pauses.

Boxplots showing the distribution of speakers' rates of occurrence for the three subcategories in each of RL and SP for each variety are given in Figure 2. Although [rl1] has a higher mean for AAE (0.194 occurrences/s) than MAE (0.109 occurrences/s), this is not a significant difference ($\beta = 0.09$, $p = 0.057$). However, both [rl2] and [rl3] are significantly more frequent in AAE than MAE ([rl2]: AAE

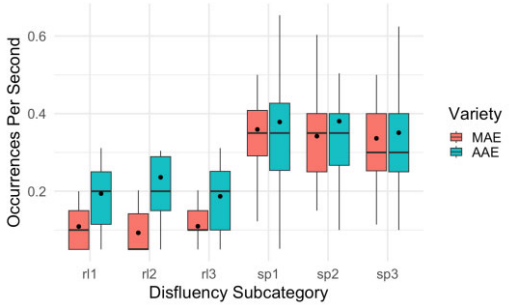

Figure 2: *Rates of occurrence of response latency subcategories* [rl1], [rl2], [rl3] *and silent pause subcategories* [sp1], [sp2], [sp3] *in MAE and AAE.*

mean = 0.236 occurrences/s, MAE mean = 0.093 occurrences/s; β = 0.12, p = 0.023; [rl3]: AAE mean = 0.187 occurrence/s, MAE mean = 0.110 occurrence/s; β = 0.09, p = 0.019). No significant differences between varieties were present for the rates of occurrence of [sp1], [sp2] and [sp3] (all $p > 0.05$).

3.2. RL opportunities

As explained in Section 2.4, in order to develop a detailed picture of the speakers' use of RLs, one must also consider how frequently RLs occur relative to the number of opportunities for an RL in a given interaction, as well as whether such opportunities were responded to with an immediate response (I), an overlap (O) or a delayed response (D). Figure 3 gives boxplots showing the distribution of speakers' proportions of D, I and O responses to RL opportunities for each variety. D responses were produced more frequently by AAE speakers (mean proportion = 0.68) than MAE speakers (mean proportion = 0.52) and this was a significant difference (z = -2.454, p = 0.0141). I and O responses were produced less frequently by AAE speakers (I mean = 0.15, O mean = 0.18) than by MAE speakers (I mean = 0.22, O mean = 0.26). However, neither of these differences were significant (for I, z = -1.478, p = 0.139; for O, z = -1.551, p = 0.121). In other words, delayed responses were used more frequently by AAE speakers than MAE speakers, while MAE speakers showed a descriptive but not statistical tendency to speak immediately or even overlap with the interlocutor more frequently than AAE speakers.

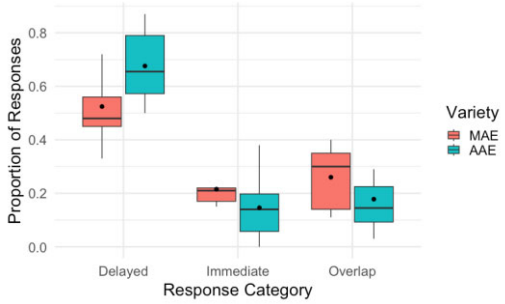

Figure 3: *Boxplots of proportions per speaker of response latency opportunities responded to with a delayed response (D), an immediate response (I) or an overlap (O).*

3.3. Duration

For each variety, boxplots showing the distribution of the duration of RLs and SPs (with durational subcategories combined) are in Figure 4. While RL duration is descriptively slightly higher in AAE (mean = 1.154s) than MAE (mean = 1.003s), there is no statistically significant difference (p = 0.08). For SP durations, there is no significant difference between varieties (MAE mean = 0.610s, AAE mean = 0.704) (p = 0.11). For [rl3], AAE speakers (mean = 1.701s) have descriptively longer RLs than MAE speakers (mean = 1.432s), but this difference is not statistically significant. Similarly, [sp3] has descriptively longer durations for AAE speakers (mean = 1.308s) than for MAE speakers (mean = 1.247s), yet this difference also does not reach statistical significance.

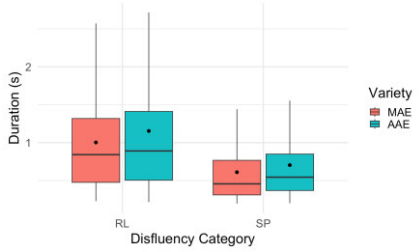

Figure 4: *Boxplots of durations of response latencies and silent pauses in MAE and AAE.*

4. Discussion and Conclusion

The study's prediction that silences would be used more frequently in AAE than MAE was confirmed for RLs, but not turn-internal SPs where no differences between varieties were observed. These RLs were descriptively, but not statistically longer for AAE speakers. Analysing RL opportunities showed that AAE speakers responded statistically more frequently with a delayed response than MAE speakers. MAE speakers produced immediate responses and overlap responses descriptively more often than AAE speakers. These findings are consistent with the qualitative observations of Eades and other researchers that AAE speakers use silent pausing in different ways in the structure of conversation. Such differences could have crucial implications in legal interview contexts [e.g. 4].

In Australia, the majority of professionals conducting legal interviews and court proceedings such as police officers, judges and lawyers, are likely to speak MAE. Indeed, the majority of people witnessing such speech events, including jury members, are likely to be MAE speakers. An AAE speaker's tendency not to respond promptly to a question in these contexts has the potential to be misinterpreted, for example as hedging or evasion. Further, as pointed out by Eades [4], an AAE speaker's answer to a question may actually be interrupted due to an interrogator's misunderstanding of ways of using silence in these varieties: "if we accept that the first part of an Aboriginal answer often starts with silence, then to start the next question before the Aboriginal interviewee has had the time to speak is in effect to interrupt the first part of the answer" [4: 178]. The present study's results provide quantitative evidence justifying the concerns of Eades and other researchers that cultural differences in interpreting silences could have a serious impact on how AAE-speaking witness's stories are told and received in legal settings. Future research should explore this further by extending the quantitative approach demonstrated in the present work to speech data from genuine police and courtroom contexts and to other sociolinguistically relevant contexts such as dialogue between two AAE speakers.

The findings also offer further confirmation that speakers of different language varieties use fluency features in different ways [cf. 16-18]. The present study focused on RLs and SPs, but it will be important to consider in future work how other fluency features behave alongside silences, especially filled pauses and prolongations of speech sounds. All of these fluency features have a range of purposes and contribute to conversational management and speech planning work in differing ways [e.g. 37-39]. Work such as [16, 28, 29] shows that an increase in use of one fluency feature can be accompanied by a decrease in the use of another both at an individual and group level. Further work underway will develop full fluency profiles for these AAE and MAE speakers to determine the extent of individual and group variation present among the different fluency features and their interrelationships. The present dataset was too small to enable analysis of age and gender patterns; these should be examined with a larger dataset in future work.

5. Abbreviations

AAE MAE	Australian Aboriginal Englishes Mainstream Australian English
RL [rl1], [rl2], [rl3] SP [sp1], [sp2], [sp3]	Response latency RL subcategories – see 2.3 Silent pause SP subcategories – see 2.3
D I O	RL opportunity responded to with a delayed response RL opportunity responded to with an immediate response RL opportunity responded to with an overlap
TOFFA	Taxonomy of Fluency Features for Forensic Analysis

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